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by an experiment, or a series of experiments. The logical sequence of subjects usually is easy to attain and needs no experiment, but the experiment brings out all the natural groups of books not anticipated by logic, history, or system.

Another advantage of experimental development of classification schemes lies in the recognition of identical forms of books under varying names. It is possible to recognize this in the classification, but frequently we may find that the catalog, or shelf list, will admit of historical grouping far better than the shelf arrangement will.

Close classification has its great advantages, but also leaves the door open for interminable minor changes and modifications,—and, worse yet, for a minuteness so intricate that it defies even good will and average intelligence. It also brings into prominence the notation. There is a growing and justified tendency to discard unnecessarily elaborate notation schemes, and to insist on a call number which will reduce, instead of increase, the forced attention of readers and attendants to minute details not of first importance in the working of the library.

We are approaching an age when, in many classes of literature, the author entry is secondary in importance to the classification entry or to the subject heading. It is of less consequence, from a social point of view, who did the work than how it was done. In classification, similarly, it is more important, as Mr. Campbell once put it, that everything pertaining to a certain subject is kept in one pigeonhole and that pigeonhole is numbered,—this is relatively more important than that the last word on the subject, in the philosophy of science, has been heard. For the last word in philosophy of science may be recalled to-morrow, and a new consensus asked; but libraries cannot, and should not, change their classification schemes with every change in the philosophic points of view. None of us has faith in indiscriminate pigeonholing; but each and all will see the advantage of experimental development of classification groups based upon the balance between logical locality and practical use. As this is done more and more, it will be seen that the cataloging and the classification scheme may interact in such a way that an adequate presentation of books will result.

## THE PROBLEM AND THE THEORY OF LIBRARY CLASSIFICATION

By HENRY E. BLISS, *Librarian, College of the City of New York*

Where there is an unsolved problem of practical interest there is need for an applicable theory. A theory is a generalized statement of principles adduced from the facts comprehended. A problem arises in any undertaking to handle or control a complex thing in complicated relations. A problem is a question how; a theory is a first answer; a complete answer is a solution. In a difficult problem there is seldom a solution without an applicable theory. So problem and theory cannot well be treated separately. This you all know and

this you mean when you speak of going about a matter intelligently.

Now, that the problem of library classification has not yet been solved for present tendencies and probable developments even the votaries of systems in vogue are recognizing. No applicable theory has as yet been set forth clearly; no embodiment of sound principles has been established. With due regard to those present and past who have constructed serviceable systems or contributed well in their writings, this is said to emphasize the purpose with which

discussion is reopened today, that fundamentals may again be stated and methods reconsidered. A definite canon we may hardly expect to bring forth; but let us hope that certain aspects of the problem may to some extent be mentally cleared, even if all cobwebs be not swept from our professional minds.

First let us re-state our problem. How shall books in libraries be arranged economically and conveniently? The books are as various as the interests served and are needed in as many groupings, with little delay in service, little shifting on the shelves, and little alteration of shelf marks. We grimly face the question of economy; for the world's immense waste in other fields will necessitate economy in these fields. But the problem of system we also face; for as organization based on knowledge becomes prevalent, the knowledge in books becomes increasingly valuable, and so does system in libraries. For economy and convenience, then, into how many groups should a hundred thousand volumes be divided, and how many of these should be permanent, relatively; and how should these groups be related, collocated, and designated?

Before attempting to answer these questions it is well to state the distinction and the relation between group and class. A group of things is as concrete as the things are, real, complete, and numerically definite. A class is the totality of particular things, both existent and potential, whether they be grouped or distributed, that may be comprised by its definition and named by its name. Things may be classed with regard to some external characteristic or with regard to some internal trait or may be classed by some external relation of interest to the classifier. The names and their definitions are the correlates of the classes and the classes comprise not only the existent things that may be so grouped but all that may properly be so defined and possibly so classed. This is our first principle, *the correlation of class to concept*.

To class a thing is to assign it to some

class. To classify is to arrange things, or classes, with regard to some system, purpose, or interest. A classification is a system of classes, or a method of art of classifying. Things, having many characters and qualities, may be classed in various ways, whether by single characters or combination of characteristics. In other words, things regarded as like in some respects may be again likened in other respects, may be regarded now in one class now in another. This, our second principle, is the *relativity of classes*.

But a library should not undertake to provide for all possible classes. It is our problem to systematize a selection of classes corresponding to the branches of knowledge and the various interests and studies of life and thought that are likely to be embodied in books. By this system the books of a growing collection are to be classified with regard to utility, convenience, and economy. Well subordinated and well collocated, fewer classes suffice. For new or for more specific subjects and new relations there should be ample provision. Unlimited expansibility is possible through subordination. But in practice expansion should be elastic rather than elaborate. This is the principle of *economy of classification with expansibility and adaptation*.

Expansion depends mainly upon *subordination* of new and more specific subjects to older and more generic classes. In nature and in knowledge the consequent develops from the antecedent. From analysis and definition are derived newer or more specific classes. By comparison and synthesis, specific characters may be found like, and more generic classes may be defined, more general theories stated, and more comprehensive knowledge attained.

In so far as things in nature are discovered to be not only related but determined by relations, actions, or purposes, there is a casual order. Thus each particular object, action, or event is found immersed in relations, or composite of them, or dependent on some of them. Things are com-

ponents of more and more extensive and complex systems. Thus our world of entangled realities is conceived as the coherent universe. The "natural order" is this conceptual system, correlative to the classification of the real, causal, historical, and genetic order of things.

The so-called natural classification of knowledge embodies this truth, albeit imperfectly as knowledge is incomplete. We study things in their relations and, while we unvell the more specific, we reveal the more comprehensive relations. Each of the special sciences is distinguished from its next of kin as being less extensive in synthesis or scope and more specific in analysis and definition. The sciences may therefore be arranged in a series consistent with the natural order. This is the true basis of their classification and of scientific classification for libraries. For the main classes at least this permanent and coherent classification is feasible and has been set forth. This classification must be relatively permanent in its main classes and divisions. The principle here adduced is the *relative permanence of generic classes* and the mutability of specific.

For libraries, subdivisions may need readjustment, but alteration of notation is an obstacle hard to surmount. The notation should be the servant, not the master of the classification. Either subdivisions should not have notation or this should be conveniently alterable, at least for mutable subjects, and applied in some temporary way on inserted cards or labels. I suggest a marked disk visible at the top of the book's back and attached there by a flat tongue inserted easily into the book. When the books are in use, the disks may be fastened to a strip on the shelf or put

into an indicator such as one college library has provided.

In bibliographic classification the main classes often regarded as "coördinate," are naturally subordinate to the more general as their scope is more and more specific. Where several divisions or subdivisions of main classes may be regarded as of equal importance in their relations, the subjects may be termed *coördinate*. Beyond this, *coördination*, as a principle of classification, hardly extends.

On *collocation* of classes and subjects, whether in subordination or in coördination, the serviceability of a classification chiefly depends, for it should bring together the groups of books most often wanted together. Though no serial arrangement of classes can conform perfectly with the natural order nor with the complicated relations of things, yet that classification which is most consistent with the natural order and which has most scientific subordinations and most useful collocations will prove most efficient in serving students in libraries. This may well be termed the principle of *maximum efficiency in service*.

A system embodying the foregoing principles, being desirable and feasible, should be developed, adopted by a consensus, and published in unexpanded form. For large and for specialized libraries expansions could be elaborated on this basis, or special classifications could be made consistently with these principles.

Under the dominating tendency termed "organization," the world is now intent upon classification, extending it to many fields where disorganization has proved inadequate or disastrous. For such an organized world libraries should be classified with better regard for the relations and divisions of the sciences and industries.